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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/921,917	08/06/2001	Jonas Karlsson	040000-792	8584
27045	7590	03/28/2005	EXAMINER	
ERICSSON INC. 6300 LEGACY DRIVE M/S EVR C11 PLANO, TX 75024			WANG, TED M	
			ART UNIT	PAPER NUMBER
			2634	

DATE MAILED: 03/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/921,917

Applicant(s)

KARLSSON ET AL.

Examiner

Ted M Wang

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 06 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7 is/are allowed.
- 6) ☒ Claim(s) 1-3, 8, and 10-20 is/are rejected.
- 7) ☒ Claim(s) 4-6, 9 and 21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Drawings*

1. Figure 1-5 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 100A – 100K in Fig.3. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

3. The disclosure is objected to because of the following informalities:
- On page 5, line 10, delete "it", line 19, change "6406" to – 406 --, line 20, change "601" to – 401 --.

Appropriate correction is required.

***Claim Objections***

4. Claims 9 and 17-21 are objected to because of the following informalities:
- Claim 9 is objected to since the value of r has not been defined.
  - Claim 17 is objected to as being a substantial duplicate of claim 12.
  - Claim 21, line 5, change "SIR" to -- Signal-to-interference ratio (SIR) --.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 8 and 10 recite the limitation of "the first threshold factor" that is improperly defined since it has not been introduced previously. There is insufficient antecedent basis for this limitation in the claim.

7. Claim 11 recites the limitation of "a third value" and "a four value" that is not defined properly since a first and second values have not been introduced in the claim, and the limitation of "the third fixed value" and "the four fixed value" in line 8 that is

insufficient antecedent basis for this limitation in the claim since it has not been introduced previously.

8. Claim 12-16 recites the limitation of "a second threshold value" in line 3 that is improperly defined, since a first threshold value has not been introduced in the claim.

9. Claims 13 and 15 recite the limitation of "the second threshold factor" that is improperly defined since it has not been introduced previously. There is insufficient antecedent basis for this limitation in the claim.

10. Claim 17-20 recites the limitation of "a third threshold value and a second test statistic" in lines 4 and 5 that is improperly defined, since a first and second threshold value and a first test statistic have not been introduced in the claim.

***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

12. Claims 1 and 2 are rejected under 35 U.S.C. 102(a) as being anticipated by the admitted prior art of the instant application.

- With regard claim 1, the admitted prior art of the instant application teaches a method for estimating a spreading factor comprising:  
inputting a received signal into a plurality of matched filters (Fig.4 element 406 and page 5 lines 17-27), each matched filter having a unique spreading factor (page 5 lines 17-27), de-spreading the received signal with a spreading code

corresponding to the spreading factor (page 5 lines 21-23) and outputting a plurality of de-spread signals (Fig.4 element 404 input and page 5 lines 23-25); calculating a mean power for each of the plurality of output de-spread signals (page 6 lines 26-27 and page 6 line 1-6); and estimating a spreading factor of the received signal based on the calculated mean power (page 6 lines 2-6).

- With regard claim 2, the admitted prior art of the instant application further teaches determining a maximum mean power (page 6 lines 2-3), and finding the matched filter that corresponds to the maximum mean power (page 6 lines 3-4); and outputting the spreading factor of the matched filter that corresponds to the maximum mean power as the estimated spreading factor (page 6 lines 4-6).

***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art of the instant application in view of Lomp et al. (US 5,991,332).

- With regard claim 3, the admitted prior art of the instant application teaches all of the subject matter as described in the above paragraph except for specifically

teaching calculating an absolute amplitude for each of the plurality of de-spread signals, calculating a matched filter integrand,  $MFAI.sub.X$ , for each of the plurality of de-spread signals, calculating a matched filter difference,  $MFD.sub.X$ , for each pair of adjacent matched filters, and estimating a spreading factor of the received signal based on the matched filter difference,  $MFD.sub.X$ .

However, Lomp et al. teaches that a) calculating an absolute amplitude for each of the plurality of de-spread signals (Fig.4 elements 406 and 407 and column 18 line 20-48), calculating a matched filter integrand,  $MFAI.sub.X$ , for each of the plurality of de-spread signals (Fig.4 elements 404 and 405 and column 18 line 20-48), calculating a matched filter difference,  $MFD.sub.X$ , for each pair of adjacent matched filters (Fig.4 element 410 and column 18 line 20-48), and estimating a spreading factor of the received signal based on the matched filter difference,  $MFD.sub.X$  (Fig.4 element  $E(\tau)$  and column 18 line 20-48).

It is desirable to calculate an absolute amplitude for each of the plurality of de-spread signals, a matched filter integrand,  $MFAI.sub.X$ , for each of the plurality of de-spread signals, a matched filter difference,  $MFD.sub.X$ , for each pair of adjacent matched filters (Fig.4 element 410); and estimate a spreading factor of the received signal based on the matched filter difference,  $MFD.sub.X$  in order to reduce the difference between the early and late values to tend toward zero (column 18 lines 46-48). Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the method as taught by Lomp et al. in which, calculating an absolute amplitude for

each of the plurality of de-spread signals, calculating a matched filter integrand, MFAI.sub.X, for each of the plurality of de-spread signals, calculating a matched filter difference, MFD.sub.X, for each pair of adjacent matched filters, and estimating a spreading factor of the received signal based on the matched filter difference, MFD.sub.X., into the admitted prior art of the instant application's match filter circuit and SF detection circuit so as to reduce the difference between the early and late values to tend toward zero.

***Allowable Subject Matter***

15. Claim 7 is allowed.
16. Claims 9 and 21 would be allowable if rewritten to overcome the objection(s) set forth in this Office action.
17. Claims 4-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
18. Claims 8, 10-20 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
19. The following is an examiner's statement of reasons for allowance.
  - The prior art fails to teach a method of Claim 7 that specifically comprises the following:
    - The instant application is deemed to be directed to a non-obvious improvement over the admitted prior art of the instant application and the invention patented in



Pat. No. US 5,991,332, US 6,430,239 and US 6,678,314. The improvement comprises that determining a non-zero rate transmission has occurred if the likelihood ratio is greater than or equal to the first threshold value, or determining that a zero rate transmission has occurred if the likelihood ratio is less than the first threshold value so as to improve the processing delay in multiple access interference cancellation (page 2 lines 6-10).

***Conclusion***

20. Reference(s) US 6,430,239 and US 6,678,314 are cited because they are put pertinent to the spreading factor determination. However, none of references teach detailed connection as recited in claim.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M. Wang whose telephone number is 571-272-3053. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ted M Wang  
Examiner  
Art Unit 2634

Ted M. Wang



**SHUWANG LIU**  
**PRIMARY EXAMINER**